



# JUST 4 GROWERS

GLOBAL GARDEN COMMUNITY

INFOSHEET 11001:

## Growing Media & Irrigation

Where Your Roots At?  
Understanding Growing Media



### Introduction



Plants don't just grow in soil. As long as there's sufficient water, air and nutrients available within reasonable temperature and pH ranges, plants will grow happily in anything from sand, expanded clay balls, coconut husk, fabric, or polystyrene! You can even grow plants in air, just as long as they are supported and their roots are kept in dark, moist conditions.

### Where Are Your Roots At?



Most soil-less growing media are inert—they do not contain any plant nutrients within themselves. Plants are fed via a nutrient solution which is irrigated through the growing media.

There are many different varieties of growing media. In order to know which one is right for you, first you need to understand how they work and what they do.

### JARGON BUSTER

#### pH

pH is a measure of a material's acidity / alkalinity. The pH around a plant's roots has a major effect on the plant's ability to absorb various mineral elements. Some growth media needs to be pH adjusted before it is ideal for growing plants. This is achieved by soaking the growth media in a pH-adjusted solution.

#### WHC (Water Holding Capacity)

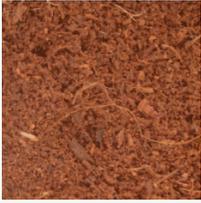
One of the major functions of growing media is to absorb moisture so that it is available for roots to uptake. Some materials are very absorbent / restrictive (e.g. rockwool / stonewool) whereas others are non-restrictive (e.g. clay balls.) The ability of a growing media to hold and store water is a major determinant of your irrigation strategy.

#### AFP (Air Filled Porosity)

Roots don't just need moisture—they need air (oxygen) too. This may seem a little odd as we don't often think of air being below ground level, but it still exists in tiny little pockets. Roots can suffocate in wet, compacted conditions which, in turn, can cause a host of problems for your plants!

#### CEC (Cation Exchange Capacity)

When growing media absorbs your nutrient solution it holds on to important elements such as calcium, magnesium, and potassium. In order to make these available to your plants it needs to release these elements in the form of positive charged elements (cations). Growing media with a low CEC allows cations to be easily washed away whereas growing media with a high CEC holds on to these cations and acts as a long term store.



### Coco Coir

The shredded inner pith of the coconut husk.

pH (6.0) WHC (high) AFP (med) CEC (med)



### Rockwool / Stonewool

Heated basalt rock and chalk spun into a fibrous, lightweight material.

pH (8.0) WHC (high) AFP (med) CEC (low)



### Perlite

Superheated volcanic silicious rock.

pH (7.0) WHC (med) AFP (high med) CEC (low)



### Clay Balls

Heat-expanded, round-shaped clay pebbles of mixed sizes (8-16mm most commonly used).

pH (7.0) WHC (low) AFP (high) CEC (low)

## Where Are Your Roots At?



### Purpose of Growing Media

Your growing media may provide some or all of these functions:

- ▶ Structural support for your plant - something for the roots to 'anchor' into!
- ▶ Insulation for your plants' roots to guard against temperature extremes.
- ▶ Retain a mix of moisture and air space for healthy roots.
- ▶ Exchange cations - retain and exchange minerals - nutrients for your plants.
- ▶ Provide a home for beneficial biology around the root zone

### Other Points to Consider

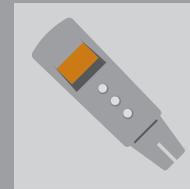
- ▶ **Inherent pH:** Some growing media require treatment with pH adjusted water or nutrient solution to bring the pH into the ideal band for plant growth.
- ▶ **Structural integrity:** Will the growing media break down during the growing process or does it stay intact, implying reusability? If it is not reusable is the growing media easy to dispose of?
- ▶ **Is the growing media manufactured from a sustainable source?**
- ▶ **Cost:** Remember, some hydroponic growing systems use little to no growth media.

## Pure Hydroponics



Did you know it's possible to grow plants in aerated, nutrient-rich water? This technique, known broadly as "Deep Water Culture" is often regarded as "pure hydroponics."

## Pro Tools



▶ Conductivity Meter



▶ Digital pH Meter

- ▶ pH Adjusting Solution
- ▶ pH & Conductivity Calibration Solution
- ▶ Mycorrhizae Funghi
- ▶ Breathable Fabric Pots / Root Trapping Pots
- ▶ Air Pump / Air Stone

IN ASSOCIATION WITH:

### DON'T FORGET TO CHECK OUT THESE INFOSHEETS:

- ▶ 11002 Coco Coir
- ▶ 11003 Peat-Based Soilless Potting Mixes
- ▶ 11004 Rockwool



**JUST 4 GROWERS**  
GLOBAL GARDEN COMPANY LTD

For grow tips, expert advice, and educational videos check out [JUST4GROWERS.COM](http://JUST4GROWERS.COM)